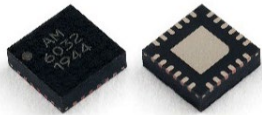


AM6032 – Switch

DC to 26.5 GHz SP4T

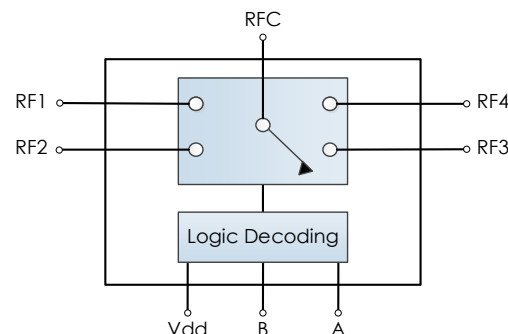


AM6032 is a reflective Single-Pole Four-Throw (SP4T) switch covering the DC to 26.5 GHz frequency range suited for a wide range of wireless applications. The AM6032 provides low insertion loss, flat frequency response, high isolation and linearity, and fast switching speed making this switch ideal for high frequency, low power transmit/receive applications. The AM6032 requires only a single positive supply and two positive control voltages. With internal 50Ω matching, internal decoder circuitry, and low current draw all packaged in a 4mm QFN, the AM6032 represents a compact total PCB footprint with minimal size, weight, and power (low SWaP).

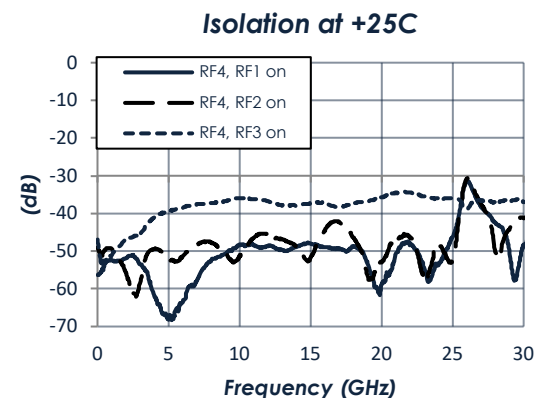
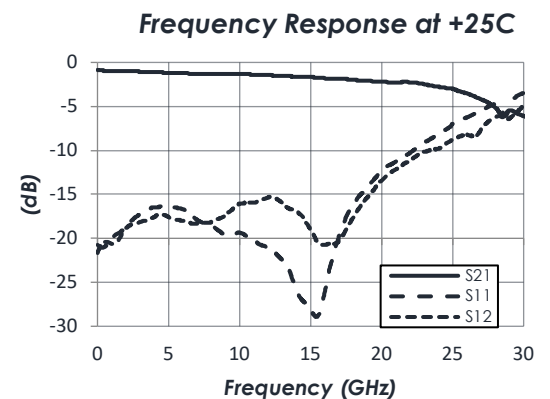
FEATURES

- 2.0 dB Insertion Loss
- +40 dBm Input IP3
- >35 dB Isolation
- +3.3V to +5.0V Supply
- +3.3V to +5.0V Control
- 4mm QFN
- -40C to +85C Operation

FUNCTIONAL DIAGRAM



CHARACTERISTIC PERFORMANCE





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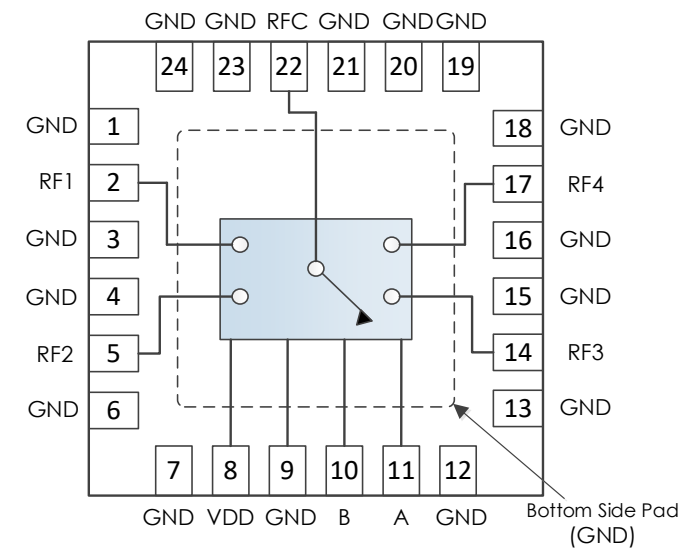
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REVISION HISTORY

Date	Revision	Notes
June 17, 2020	1	Initial Revision.
August 16, 2021	1.1	Part Picture Updated.
July 22, 2024	2	Changed to Mercury branding. No content changes.

PIN LAYOUT AND DEFINITIONS



Pin	Name	Function
1	GND	Ground - Common
2	RF1	RF1 Output - 50 Ohms - DC Coupled. External DC Blocking Capacitor Required*
3, 4	GND	Ground - Common
5	RF2	RF2 Output - 50 Ohms - DC Coupled. External DC Blocking Capacitor Required*
6, 7	GND	Ground - Common
8	VDD	DC Power Input
9	GND	Ground - Common
10	B	Switch Control B
11	A	Switch Control A
12, 13	GND	Ground - Common
14	RF3	RF3 Output - 50 Ohms - DC Coupled. External DC Blocking Capacitor Required*
15, 16	GND	Ground - Common
17	RF4	RF4 Output - 50 Ohms - DC Coupled. External DC Blocking Capacitor Required*
18-21	GND	Ground - Common
22	RFC	RFC Input - 50 Ohms - DC Coupled. External DC Blocking Capacitor Required*
23, 24	GND	Ground - Common

***Note:** DC blocking caps not required if in series with other Mercury parts of the same reference voltage.

SPECIFICATIONS

Absolute Maximum Ratings

	Minimum	Maximum
Supply Input Voltage	-0.3 V	+6.0 V
RF Input Power		+27 dBm
Operating Junction Temperature	-40 C	+150 C
Storage Temperature Range	-50 C	+150 C

Note: Any device operation beyond the Absolute Maximum Ratings may result in permanent damage to the device. The values listed in this table are extremes and do not imply functional operation of the device at these or any other conditions beyond what is listed under Recommended Operating Conditions. Any part subjected to conditions outside of what is recommended for an extended amount of time may suffer from reliability concerns.

Handling Information

	Minimum	Maximum
Storage Temperature Range (Recommended)	-50 C	+125 C
Moisture Sensitivity Level	MSL 3	



Mercury products are electrostatic sensitive.
Follow safe handling practices to avoid damage.

Recommended Operating Conditions

	Minimum	Typical	Maximum
Supply Voltage	+3.3 V	+5.0 V	+5.2 V
Operating Case Temperature	-40 C		+85 C
Operating Junction Temperature	-40 C		+125 C

DC Electrical Characteristics

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
DC Supply Voltage		+3.3 V	+5.0 V	
DC Supply Current	VDD = +5.0 V		5 mA	
Power Dissipated	VDD = +5.0 V		25 mW	
Logic Level Low		0.0 V		+0.5 V
Logic Level High		+2.0 V		+VDD

RF Performance

(T = 25 °C unless otherwise specified)

Param	Testing Conditions	Min	Typical	Max
Frequency Range		DC		26.5 GHz
Insertion Loss	f = 0.1 GHz, RF1/RF4		-0.90 dB	
	f = 0.1 GHz, RF2/RF3		-0.85 dB	
	f = 10 GHz, RF1/RF4		-1.35 dB	
	f = 10 GHz, RF2/RF3		-1.30 dB	
	f = 26.5 GHz, RF1/RF4		-3.85 dB	
	f = 26.5 GHz, RF2/RF3		-3.60 dB	
Return Loss	RF1/RF4		-15 dB	
	RF2/RF3		-15 dB	
Output IP3	VDD = +5.0 V		+40 dBm	

Timing Characteristics

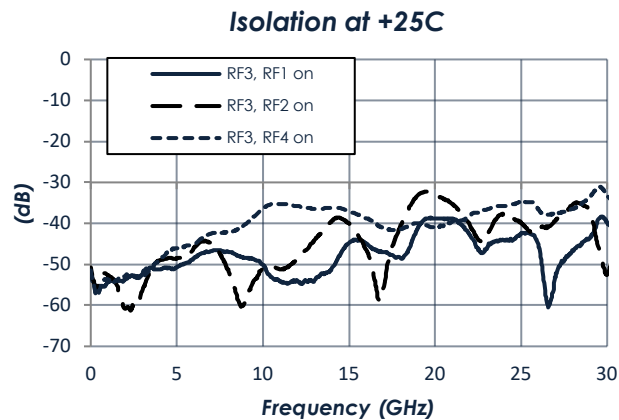
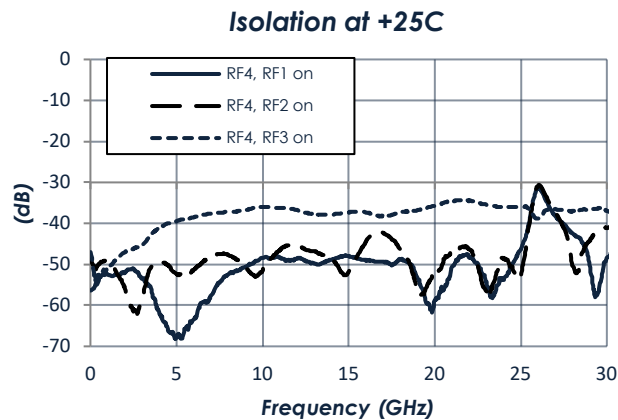
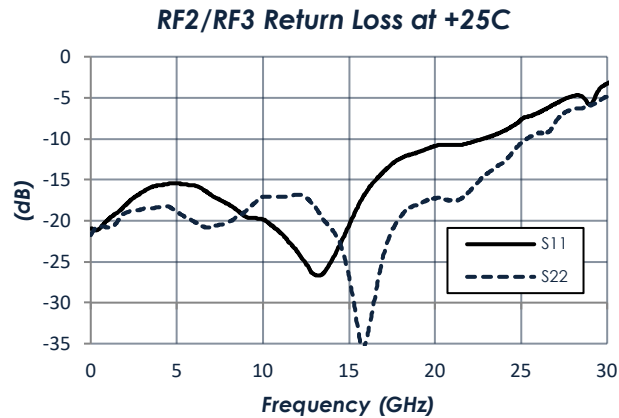
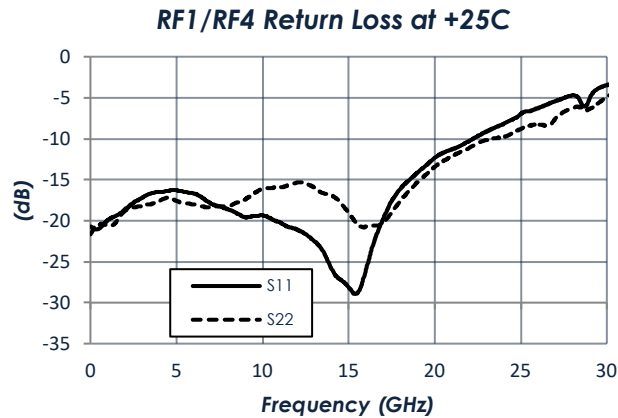
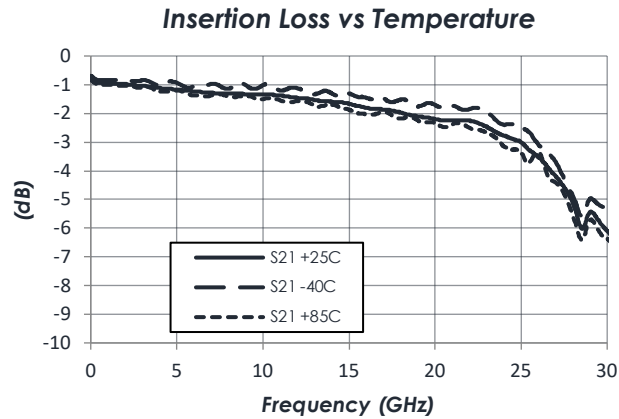
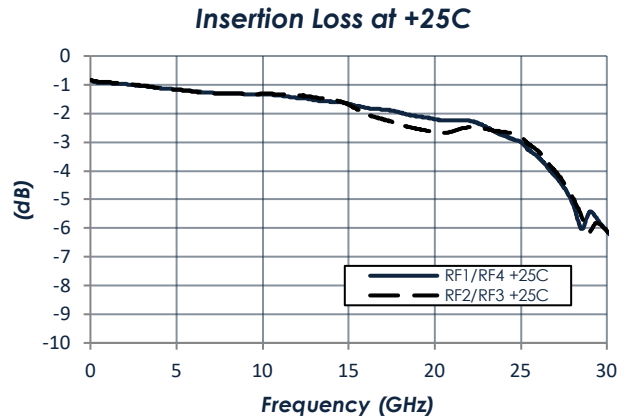
Parameter	Minimum	Typical	Maximum
Switching Speed (Path Enabled → Disabled)		10 ns	
Switching Speed (Path Disabled → Enabled)		10 ns	
Note: Switching speed measured without any control line filtering.			

State Table

A	B	State
L	L	RFC → RF1
L	H	RFC → RF2
H	L	RFC → RF3
H	H	RFC → RF4

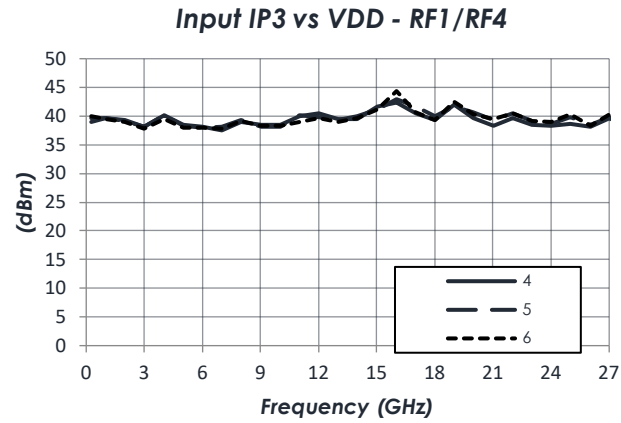
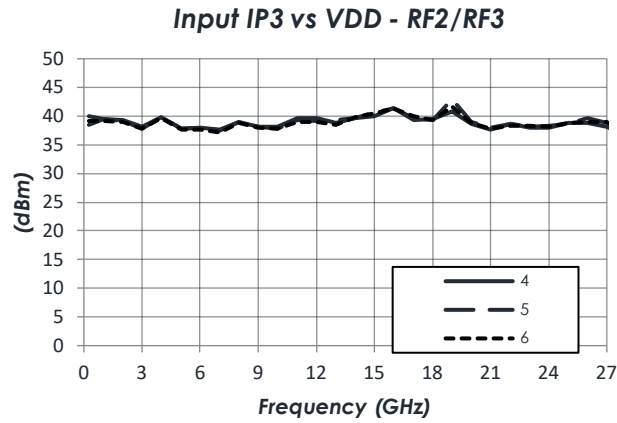
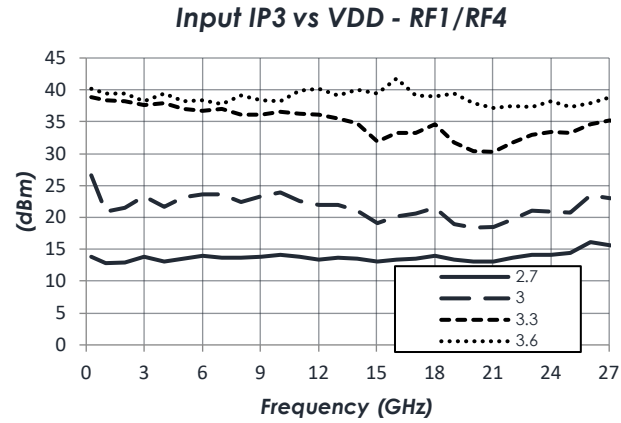
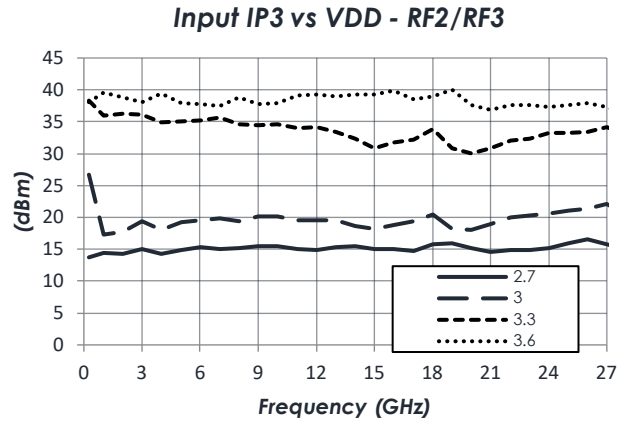
TYPICAL PERFORMANCE

(VDD = +5.0V unless otherwise specified)

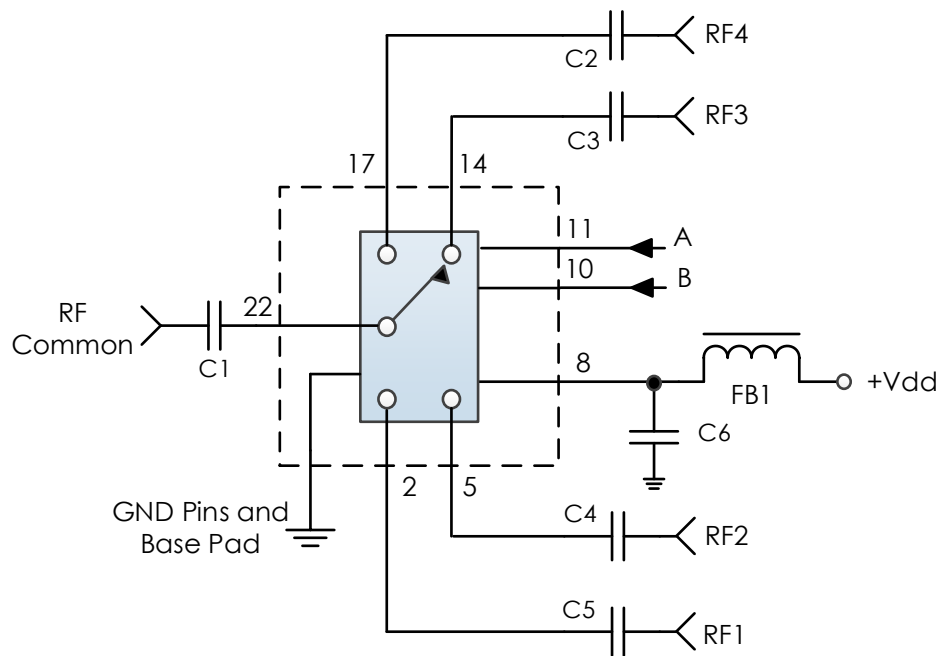


TYPICAL PERFORMANCE (CONTINUED)

(VDD = +5.0V unless otherwise specified)



TYPICAL APPLICATION



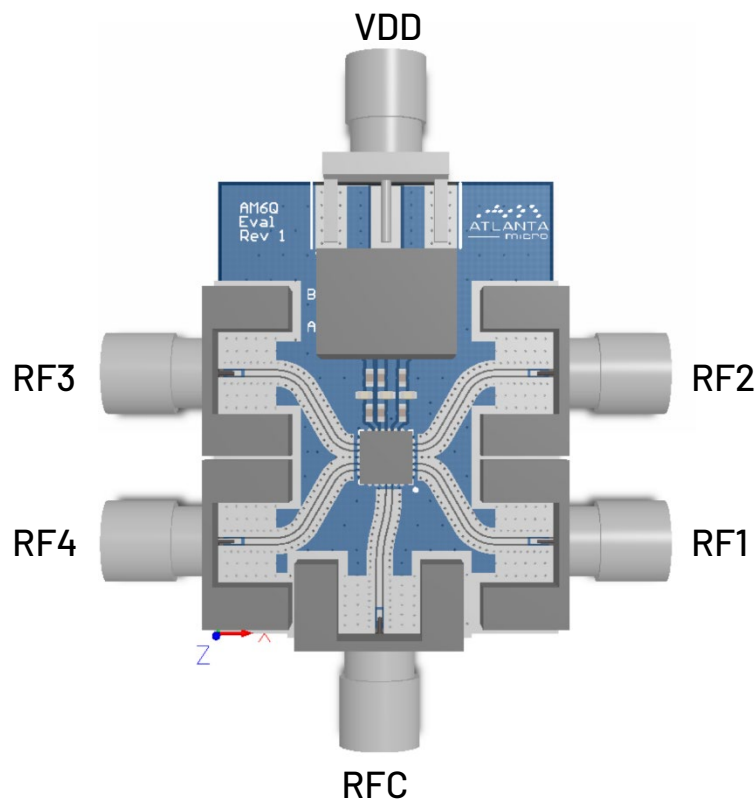
Recommended Component List (or Equivalent)

Part	Value	Part Number	Manufacturer
C1-C5	0.1 μ F	0402BB104KW160	Passives Plus
C6	0.1 μ F	C1005X7R1H104K050BB	TDK
FB1	-	MMZ1005A222E	TDK

Notes:

1. RF blocking capacitors should be high performance, low-loss, broadband capacitors for optimum performance.
2. RC filtering on the control lines is recommended to prevent digital noise from coupling to the RF path.
 - a. Select control line RC filter values based on desired logic source decoupling and switching speed.

EVALUTATION PC BOARD



Note: DC blocking capacitors not included on the AM60Q Evaluation Board. External DC blocks are required.

RELATED PARTS

Part Number		Description
AM6013	DC to 20 GHz	SP4T, Reflective
AM6016	DC to 26.5 GHz	SPDT, Reflective
AM6017	DC to 26.5 GHz	SP4T, Reflective
AM6029	DC to 18 GHz	SP4T, Reflective

COMPONENT COMPLIANCE INFORMATION

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Substance List	Allowable Maximum Concentration
Lead (Pb)	<1000 PPM (0.1% by weight)
Mercury (Hg)	<1000 PPM (0.1% by weight)
Cadmium (Cd)	<75 PPM (0.0075% by weight)
Hexavalent Chromium (CrVI)	<1000 PPM (0.1% by weight)
Polybrominated Biphenyls (PBB)	<1000 PPM (0.1% by weight)
Polybrominated Diphenyl ethers (PBDE)	<1000 PPM (0.1% by weight)
Decabromodiphenyl Deca BDE	<1000 PPM (0.1% by weight)
Bis (2-ethylhexyl) Phthalate (DEHP)	<1000 PPM (0.1% by weight)
Butyl Benzyl Phthalate (BBP)	<1000 PPM (0.1% by weight)
Dibutyl Phthalate (DBP)	<1000 PPM (0.1% by weight)
Diisobutyl Phthalate (DIBP)	<1000 PPM (0.1% by weight)

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